

Severe local hail and wind storms—Continued

| Place | Date | Time | Width of path | Loss of life | Value of property destroyed | Character of storm | Remarks | Authority |
|--|-------|--------------|---------------|--------------|-----------------------------|--|--|--|
| Philadelphia, Pa. | 24-25 | | | | | Wind and rain | Trees uprooted, obstructing traffic; other minor damage. | Official, U. S. Weather Bureau. |
| Port Arthur, Tex. | 24 | | | | | Thunderstorm | Electric lines affected. | Do. |
| Crenshaw, Pike, southern Bullock and northern Barbour Counties, Ala. | 25 | 2-4 a. m. | 400 | 18 | \$250,000 | Tornado | Very heavy property damage; many persons injured. Path, 75 miles long. | Do. |
| Abbeville, Anderson, Greenville, Laurens and Spartanburg Counties, S. C. | 25 | 5:40-7 a. m. | 300-8,800 | | 109,300 | Thunderstorm, hail, and destructive winds. | Extensive property damage over path 50 miles long; 51 persons injured. | Do. |
| Woburn, Mass., and vicinity. | 25 | 3:13 p. m. | | 1 | | Tornado | 75 buildings wrecked; 6 persons injured while many narrowly escaped death. | Boston Post (Mass.); Boston Daily Globe (Mass.). |
| Atlanta, Ga. | 25 | | | | | Wind | Large church tent blown down. | Official, U. S. Weather Bureau. |
| Baltimore, Md. | 25 | P. m. | | 1 | | Wind | 17 Navy seaplanes torn from anchorage off Dundalk; all damaged, 2 wrecked beyond repair; minor damage in city; several persons injured. | Do. |
| Maryland | 25 | | | | 8,300 | Wind | Property and crop damage at Belair, Delmar, Keymar, Millsboro, Maryland Line, Massey and Saint Inigoes; also in parts of Washington, Frederick and Carroll Counties. | Do. |
| New Jersey (southern half and coast section). | 25 | | | 1 | | Severe wind | Some buildings damaged, others wrecked; farm buildings, shore cottages, and wires hard hit. | Do. |
| New York, N. Y., and vicinity. | 25 | | | | | Strong winds | Considerable damage to buildings and shipping in city; minor damage in other parts of State. | Do. |
| Piedmont, Wyo. | 29 | | | 1 | | Thunderstorm | No property damage reported. | Do. |

STORMS AND WEATHER WARNINGS

WASHINGTON FORECAST DISTRICT

October, 1925, was a stormy month, and warnings were required for the Atlantic coast north of Cape Hatteras in connection with seven storms. Ordinarily, October is a rather quiet month in the Washington forecast district, with few disturbances of consequence crossing the country and with many pleasant days and few rainy. Quite different conditions prevailed during the month just ended. At Washington, D. C., there were 14 days with precipitation of 0.01 inch or more, as compared with a normal of 9 days, and only 4 clear days, as compared with a normal of 14. Moreover, the temperature was above normal on only 6 days, while it was 12 or more degrees below normal on 7 days. In spite of the unseasonably low temperatures, killing frost did not occur at Washington until the 28th, the average date of the first killing frost in autumn being October 20.

The first storm of consequence developed over the middle Atlantic States during the 9th and moved rapidly northeastward. Storm warnings were ordered displayed at 9.30 p. m. from Jacksonville, Fla., to Eastport, Me. The highest recorded wind velocities were: Sixty miles from the northwest at Cape Henry, Va., 80 miles from the northwest at New York City, and 52 miles from the east at Eastport, Me.

The least important of the seven storms referred to was that of the 14th-15th, for which storm warnings were issued from Delaware Breakwater to Eastport. The only verifying velocity reported was 48 miles from the southeast at Atlantic City, N. J.

During the remainder of the month storms followed in rapid succession, and warnings were issued as follows: 16th, 10 p. m., Delaware Breakwater to Eastport, Me.; 17th, 10 a. m., south of Delaware Breakwater to Cape Hatteras; 19th, 10.30 a. m., Cape Hatteras to Boston, Mass.; 24th, 4 p. m., Delaware Breakwater to Eastport, Me., and 25th, 10 a. m., south of Delaware Breakwater to Wilmington, N. C.; 28th, 4 p. m., Cape Hatteras to Block Island, R. I.; 30th, 4 p. m., Jacksonville, Fla., to Boston, Mass. These warnings were all well verified. The most severe storm was that of the 24th-25th. A disturbance that developed over Oklahoma and northern Texas during the 22d-23d had advanced to extreme southern Illinois by the morning of the 24th and to Ohio by the night of the same date. Up to this time it was only of moderate intensity, but there were indications of increased development, so, southeast

storm warnings were ordered displayed at 4 p. m. from Delaware Breakwater northward. During the night of the 24th the disturbance increased greatly in intensity and on the morning of the 25th, it was centered over western New York as a severe storm with strong indications that a secondary disturbance was developing over the middle Atlantic States. This secondary quickly formed and at noon was centered near New York City with a barometer reading of 29.10 inches. The secondary, as was expected, soon became the principal storm, and moved very rapidly northeastward, the center being near Eastport at 8 p. m. with a barometer reading of 28.80 inches. During the ensuing 24 hours this severe storm moved rapidly northeastward over the Canadian Maritime Provinces. The following high wind velocities were reported: 88 miles from the northwest at New York City, 64 miles from the southwest at Sandy Hook, Block Island, and Atlantic City, and 60 miles from the southwest at Cape Henry.

Small-craft warnings were issued as follows: 16th and 30th, Pensacola, Fla., and Mobile, Ala., sections; 25th, Charleston, S. C., Savannah, Ga., and Jacksonville, Fla., sections.

Frost warnings were issued for some part of the Washington district on 14 dates during the month, the most important being those issued on the 9th, 10th, 19th, 20th, and 28th. Frost had occurred by the end of the month as far south as the central portions of Mississippi, Alabama, and Georgia.

Cold-wave warnings were issued for western Pennsylvania, southern Ohio, eastern and central Kentucky, and northwestern West Virginia on the 28th, and for southern Alabama, extreme northwestern Florida, and the Mississippi coast on the 30th. These warnings were only partially verified.—C. L. Mitchell.

CHICAGO FORECAST DISTRICT

Rarely in the past has October in the Chicago forecast district been so cold and inclement in general as was the month under discussion. As a matter of fact, this was the coldest October in more than half a century over virtually the entire district. Moreover, there was a marked excess of cloudy, wet weather, and over large areas the snowfall was the heaviest ever recorded for October. So-called "Indian summer" weather was almost totally lacking, a feature that was the subject of widespread comment and discussion, both on the part of the public and press.

Storm warnings.—Two or three storms of considerable intensity affected the Great Lakes during the month, and in addition there were several disturbances of less importance that called for storm warnings of more or less general scope. Thus, either storm or small-craft warnings were issued on a total of 14 days.

On the 6th rather general warnings were disseminated in connection with a disturbance that had formed two days previously over the northern Rocky Mountain region and moved eastward with increasing force. Winds of from strong to gale force occurred over most of Lakes Superior, Erie, and Ontario in this connection.

The next warning was issued on the 9th for a disturbance that developed over the Middle Atlantic States and in conjunction with a large high pressure area over the northern Great Plains caused winds of from strong to gale force over the Lower Lakes, as well as southern Lake Huron. The warning in question was intended for small craft, whereas a storm warning would have been justified. The wind continued strong over most of the Lower Lakes on the 10th.

On the 14th northwest storm warnings were issued for eastern Lake Superior and northern Lake Huron, and small-craft warnings advised for the Lower Lakes and southern Lake Huron for a disturbance that moved from the far Northwest and reached Lake Superior with increased energy. For the most part the warnings were justified. A second disturbance quickly followed on the 15th, for which small-craft warnings were advised for Lake Superior.

The next storm to call for warnings was present on the afternoon of the 16th over the Arkansas Valley, moving northeastward, and apparently about to increase in force. Accordingly, northeast warnings were issued for southern Lake Michigan, but were recalled when the evening reports indicated that the disturbance had not developed to any extent. However, a sudden and marked increase in intensity took place that night, and the center of the storm had moved to eastern New York by the morning of the 17th. As a result, small-craft warnings were advised for the Lower Lakes from Cleveland, Ohio, east.

One of the most important storms developed over the Upper Lakes on the 18th. On the morning of that date small-craft warnings were advised for Lake Superior and northern Lake Michigan, and at night storm warnings were issued for most of the Upper Lakes section. On the following morning these were extended over southern Lake Huron and the Lower Lakes. This storm was of considerable severity along the eastern shore of Lake Michigan, where at Grand Haven, Mich, a maximum velocity of 53 miles an hour was reached.

A disturbance that developed over the southern Great Plains and moved northeastward across the Ohio Valley called for southeast storm warnings on the morning of the 24th over most of the Lower Lakes section, and small-craft warnings for southern Lake Huron and extreme western Lake Erie. However, the warnings were recalled 12 hours later when it appeared that the disturbance was losing force. But, as in the storm of the 16th-17th, a marked increase in intensity occurred over night, so that storm warnings had to be issued on the 25th for Lakes Huron and Ontario, as well as Lake Erie from Cleveland, Ohio, east; and small-craft warnings were advised for western Lake Erie.

On the morning of the 26th northwest storm warnings were issued for Lakes Michigan and Huron and southwest warnings for Lake Erie for a disturbance then over the middle Mississippi Valley. In the afternoon the

warnings were extended over Lakes Superior and Ontario. The disturbance lost force, with the result that no high winds of consequence occurred. However, in connection with a marked area of high pressure over the northern Rocky Mountain Region and a depression of increasing depth over Lake Superior, northwest warnings were continued on Lake Superior on the 27th, as well as issued for Lake Michigan and northern Lake Huron. On the next day the warnings were extended over the remainder of the Lakes. Although verifying wind velocities did not occur at all stations, there is no question that the warnings were justified. On portions of Lake Superior this storm was rather severe.

Frost warnings.—At the beginning of October the growing season, already over in most of the extreme northern portion of the district, was terminated over the remainder except in the extreme south, by the general cool wave at the close of the first decade. After the 10th a few frost warnings were issued until the final warning of the 24th for southeastern Kansas. The frost warnings of this month were not of great economic importance, inasmuch as virtually all staple products had matured before frost occurred.

Cold-wave warnings.—These were issued on the 25th for a limited portion of the northwestern Great Plains area and on the 27th for most of the extreme southern part of the district. The cold period that occurred at this time was among the most notable in the history of the Weather Bureau for so early in the season, and record low temperatures prevailed over wide areas from the 28th to the 30th. At Rapid City, S. Dak., the phenomenally low minimum of -13° occurred. This is 15° lower than any previous reading at that station for October.

Livestock warnings.—Forecasts for the benefit of stock interests were issued on the 5th, 25th, and 27th. That of the 25th proved to be most timely.

Special forecasts.—A special forecast for the benefit of the contestants in the first annual Detroit News ballooning trophy race was made on the 3d. Although the forecast was for distinctly unfavorable conditions, nevertheless the flight was held, with the result that most of the balloonists had a most perilous trip.—C. A. Donnel.

NEW ORLEANS FORECAST DISTRICT

High pressure over the northern portion of the country, with relatively low pressure over the Southwestern States, prevailed during much of the month, attended by comparatively wet, cold weather in this forecast district. Nevertheless, the first week was unseasonably warm because the hot weather of September continued into October, there being no invasion of colder air from the north until the closing days of the first decade. The mean temperature for the month was the lowest of record in Oklahoma and the north portion of west Texas.

The p. m. map of the 24th showed a moderate disturbance over south Texas, with a strong gradient thence northward to Oklahoma. Northwest storm warnings were ordered for the Texas coast from Port Arthur to Freeport and northwest gales of brief duration occurred within the ensuing six hours. The gradient had greatly diminished by the next morning and the warnings were lowered.

Northwest storm warnings were issued for the Texas coast on the 27th at 8:30 p. m., because of a well-developed area of high pressure which was moving rapidly southeastward from the northern Rocky Mountain